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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,137	03/17/2004	Donald Allan Sandusky	LP 5355 US	3277
23416	7590	08/11/2004	EXAMINER	
CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899			RONESI, VICKEY M	
			ART UNIT	PAPER NUMBER
			1714	
DATE MAILED: 08/11/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/802,137	SANDUSKY ET AL.	
	Examiner	Art Unit	
	Vickey Ronesi	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: to lend support to claims 10 and 20, introduce the use of a kaolin clay extender in the specification.

The disclosure is objected to because of the following informalities:

- On page 3, line 21, "gasses" should read as "gases."
- On page 3, lines 24 and 27, "hexaflouride" should read as "hexafluoride."
- On page 4, line 14, "basket balls" should read as one word, "basketballs."
- On page 4, line 17, the acronym "MPU" is used before its definition on line 24. Revise so that "millable polyurethane (MPU)" is stated before the use of the acronym.
- On page 4, lines 27-28; page 10, line 24; Table 2; Table 3; and Table 4, the permeability units read as " $\text{cm}^3 \text{ cm/cm}^2 \text{ seconds Pascal } 10^{-13}$." It is not immediately clear if "seconds pascal

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10⁻¹³” is intended to go into the denominator or not. It is suggested that the units read as “10⁻¹³ cm³ c cm⁻² s⁻¹ Pa⁻¹.”

- On page 5, line 15, “detail” should read as “detailed.”
- On page 5, line 11, the composition 40% MPU/60% rubber is described in terms of percent concentrations that fail to specify basis, i.e., is it percent by weight or volume?
- On page 6, line 10, “phylene diisocyanate” should read as “phenylene diisocyanate.”
- On page 7, lines 14, 17, and 23 and on page 8, line 12, the amount of crystallinity is described in terms of percent concentrations that fail to specify basis, i.e., is it percent by weight or volume?
- On page 8, line 26, “isopherone” should read as “isophorone.”
- On page 8, line 30, “dxylylene” is not a chemical structure.
- On page 9, lines 11 and 21; page 12, line 16; page 15, line 3; col 16, line 20, the compositions are described in terms of percent concentrations that fail to specify basis, i.e., is it percent by weight or volume?
- On page 9, line 2, revise so that “preferabl” reads as “preferably.”
- On page 9, line 4, insert “to” between “limited” and “diethylene glycol” so that it reads as “limited to diethylene glycol.”
- On page 10, line 10 and page 11, line 1, revise so that “calendaring” reads as “calendering.”
- On page 10, line 20, remove the word “a” so that it reads as “temperature that affect...”
- On page 11, line 9, insert a space into “moreso” so that it reads as “more so.”

- Please review disclosure for other minor informalities not noted by examiner. In particular, review page 9, lines 20-26; page 11, lines 16-28.

Appropriate correction is required.

Claim Objections

3. Claims 1, 12, and 24 are objected to because the amount of clay is described in terms of a percent concentration that fails to specify basis, i.e., is it percent by weight or volume?

Claims 3, 13, and 25 are objected to because the permeability units that read as " $\text{cm}^3 \text{ cm/cm}^2 \text{ seconds Pascal } 10^{-13}$ " are unclear. It is not immediately clear if " $\text{seconds pascal } 10^{-13}$ " is intended to go into the denominator or not. It is suggested that the units read as " $10^{-13} \text{ cm}^3 \text{ c cm}^{-2} \text{ s}^{-1} \text{ Pa}^{-1}$."

Claims 3, 13, and 25 are objected to because it is not clear what the range of "not greater than about..." is intended to encompass.

Claims 10 and 20 are objected to because of misspellings. "Ulphate" should read as "sulfate." "n-tert-butyl2benxothiazolesulfenamide" should read as "n-tert-butyl-2-benzothiazolesulfoamide." "Accleerator" should read as "accelerator."

Claim 32 is objected to because "napthenic" should read as "naphthalenic."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 10 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The use of a kaolin clay extender was not disclosed in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 5, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Bradley et al (US 6,203,450).

Bradley et al discloses a golf ball that includes a solid core comprising a blend of millable polyurethane and polybutadiene rubbers where the polyurethane rubber is present from 5 to 30 wt %, a range that overlaps the presently claimed range of at least 10 wt % and at least 40 wt % millable polyurethane (col. 4, line 8-11). The polyurethane rubber is inherently substantially amorphous because rubbery/elastomeric behavior occurs primarily in materials with little to no crystallinity.

In light of the above, it is clear that Bradley et al anticipates the presently cited claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al (US 6,203,450), as applied to claims 1, 5, 8, and 9 above, in view of Calabria et al (US 2002/0098914 A1).

Bradley et al is silent with respect to the specific components of the millable polyurethane; however, Bradley et al discloses that the polyurethane rubber can be a polyether-based polyurethane rubber (col. 4, lines 11-12).

Calabria et al discloses a urethane-covered three-piece golf ball whose polyurethane cover comprises a polyol component. Calabria et al teaches that polyurethane rubbers made with ether polyols such as polypropylene ether glycol and in particular polytetramethylene ether glycol exhibit good hydrolytic stability (i.e., substantially impervious to the effects of moisture) and good tensile strength (0073, 0074).

Given that Bradley et al is open to a polyurethane comprising a ether polyol component and given that polypropylene ether glycol and polytetramethylene ether glycol provide improved hydrolytic stability and tensile strength in polyurethane rubbers as taught by Calabria et al, it would have been obvious to one of ordinary skill in the art to utilize polypropylene ether glycol or polytetramethylene ether glycol in Bradley et al and thereby at the presently cited claim.

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7. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barbee et al (US 2002/0137834 A1).

Barbee et al discloses a nanocomposite composition and articles therefrom that have improved gas barrier properties comprising a matrix polymer and a layered clay material where the clay is present in an amount less than 25 wt %, a range that overlaps the presently claimed range of up to 50% clay (0013, 0065). The matrix polymer can be any melt-processible polymer or oligomer such as polyurethanes, polyolefins, and blends thereof (0039). "Polyurethanes" encompasses such a millable polyurethane as presently claimed, and "polyolefins" encompasses a rubber as presently claimed. Compositions with the clay exhibit an at least 10% lower gas permeability than that of an unmodified matrix polymer (0112).

Although Barbee et al does not disclose specific gas-permeation barrier properties, it is the examiner's position that these values are dependent on the composition and such a composition would intrinsically have the presently claimed gas-permeation barrier properties.

In view of the above, it would have been obvious to one of ordinary skill in the art to utilize a gas-permeation barrier composition comprising a polyurethane and rubber as disclosed by Barbee et al where the oxygen permeability is decreased to below the presently claimed value.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barbee et al (US 2002/0137834 A1), as applied to claims 1-3 above, and further in view of Grossman et al (US 4,599,370) and Jablonowski ("Blends of Polyurethane Rubbers with Conventional Rubbers," Rubber Division, American Chemical Society, Paper No. 46, April 13-16, 1999).

Barbee et al is silent with respect to specific additives; however, it is open to additives such as carbon black, fillers, antioxidants, stabilizers, plasticizers, etc. as disclosed in paragraph 0063.

Grossman et al discloses a rubber composition and teaches that barium sulfate is a typical filler in rubber compositions and that guanidine derivatives, in particular diphenyl guanidine, are typical vulcanization accelerators. Jablonowski discloses a sulfur curable millable polyether urethane blended with a butadiene rubber (page 6) admixed with additives used in a typical sulfur cure system including zinc chloride with MBTS, silicon dioxide curative, and zinc stearate (pages 4 and 9).

Given that Barbee et al is open to the addition of typical additives to its rubber composition, it would have been obvious to one of ordinary skill in the art to add the specific typical rubber additives as taught by Grossman et al and Jablonowski.

9. Claims 11-13 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barbee et al (US 2002/0137834 A1), as applied to claims 1-3 above, in view of Feeney et al (US 6,232,389).

Barbee et al does not explicitly disclose inflatable articles and tennis balls as potential products of its nanocomposite; however, Barbee et al does disclose that articles such as tubes, molded articles, and performs can be prepared from its nanocomposite composition.

Feeney et al teaches that inflatable articles and tennis balls are articles that require the ability to hold air or any other gas under pressure (col. 3, lines 9-19).

Given that Barbee et al discloses a nanocomposite composition that improves gas barrier properties and given that it can be used with a variety of articles as disclosed above, it would

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have been obvious to one of ordinary skill in the art to use Barbee et al's composition with an inflatable article or tennis ball as taught by Feeney et al and thereby arrive at the presently cited claims.

10. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barbee et al (US 2002/0137834 A1) in view of Feeney et al (US 6,232,389), as applied to claims 23-25 above, and further in view of Jablonowski ("Blends of Polyurethane Rubbers with Conventional Rubbers," Rubber Division, American Chemical Society, Paper No. 46, April 13-16, 1999).

Barbee et al is silent with respect to specific additives; however, it is open to additives such as carbon black, fillers, antioxidants, stabilizers, plasticizers, etc. as disclosed in paragraph 0063.

Jablonowski discloses a sulfur curable millable polyether urethane blended with a butadiene rubber (page 6) admixed with additives used in a typical sulfur cure system including zinc chloride with MBTS, silicon dioxide curative, and zinc stearate in addition to N330 carbon black, DBEEA, and processing aids and oils (pages 4 and 9).

Given that Barbee et al is open to the addition of typical additives to its rubber composition, it would have been obvious to one of ordinary skill in the art to add the typical polyurethane/polybutadiene rubber additives as taught by Jablonowski.

11. Claims 1, 5-7, 11, 15-17, 23, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feeney et al (US 6,232,389) in view of *Hawley's Chemical Dictionary*.

Feeney et al discloses a barrier coating mixture that can be applied to a pneumatic device or any device under pressure, such as sports balls (e.g., tennis balls) and any other elastomeric-containing object that either holds air or another gas under pressure or requires the exclusion of

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air, water, or other gases (e.g., a bicycle inner tube) (col. 13, lines 8-19). Such a device (e.g., bladder or core in a ball) is currently made from natural rubber (i.e., polyisoprene), butyl rubber, and polyurethane (col. 13, lines 21-22). Note *Hawley's Chemical Dictionary* which teaches that natural rubber is commonly known as polyisoprene.

Hence, it would have been obvious to one of ordinary skill in the art to interpret natural rubber as polyisoprene and therefore conceive of a composition, like the present claims, comprising polyurethane, polyisoprene, and polybutadiene.

12. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Feeney et al (US 6,232,389) in view of *Hawley's Chemical Dictionary*, as applied to claims 1, 5-7, 11, 15-17, 23, and 27-29 above, and further in view of Koros et al (US 5,593, 157), Grossman et al (US 4,599,370) and Jablonowski ("Blends of Polyurethane Rubbers with Conventional Rubbers," Rubber Division, American Chemical Society, Paper No. 46, April 13-16, 1999).

Although Feeney et al is silent with respect to additives in a rubber-based inflatable object, Koros et al, which is in the same field of endeavor as the present invention, teaches that a rubber composition in a bladder/core in a playball includes suitable amounts of conventional compounding ingredients such as fillers, salts, plasticizers, coupling agents, metal oxides, accelerators, and sulfur or peroxide based curative systems.

Grossman et al discloses a rubber composition and teaches that barium sulfate is a typical filler in rubber compositions and that guanidine derivatives, in particular diphenyl guanidine, are typical vulcanization accelerators. Jablonowski discloses a sulfur curable millable polyether urethane blended with a butadiene rubber (page 6) admixed with additives used in a typical

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sulfur cure system including zinc chloride with MBTS, silicon dioxide curative, and zinc stearate (pages 4 and 9).

Given that Feeney et al combined with the teachings of Koros et al is open to the addition of typical additives to its rubber composition, it would have been obvious to one of ordinary skill in the art to add the specific typical additives as taught by Grossman et al and Jablonowski.

13. Claims 18, 19, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feeney et al (US 6,232,389) in view of *Hawley's Chemical Dictionary*, as applied to claims 1, 5-7, 11, 15-17, 23, and 27-29 above, and further in view of Bradley et al (US 6,203,450).

Feeney et al does not disclose the specific composition of the rubber bladder or core.

Bradley et al discloses a golf ball that includes a solid core comprising a blend of millable polyurethane and polybutadiene rubbers where the polyurethane rubber is present from 5 to 30 wt %, a range that overlaps the presently claimed ranges (col. 4, lines 8-11). Bradley et al teaches that this composition provides significant improvement in compressive properties (col. 3, lines 26-27) where the amount of polyurethane is varied to control the balance between compressive properties and resilience properties (col. 3, lines 7-10). The polyurethane rubber is intrinsically substantially amorphous because rubbery/elastomeric behavior occurs primarily in materials with little to no crystallinity.

Given that Feeney et al is open to a rubber bladder or core made from butyl rubber, polyisoprene, and polyurethane and given that Bradley et al discloses a specific butyl rubber/polyurethane composition that provides significant improvement in compressive properties, it would have been obvious to one of ordinary skill in the art to utilize Bradley et al's composition in Feeney et al and thereby arrive at the presently cited claims.

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14. Claims 4, 14 and 26 are rejected under 35 U.S.C.(a) as being unpatentable over Feeney et al (US 6,232,389) in view of Bradley et al (US 6,203,450), as applied to claims 1, 5-9, 11, 15-19, 21-23, and 27-31 above, and further in view of Calabria et al (US 2002/0098914).

Feeney et al and Bradley et al are silent with respect to the specific components of the millable polyurethane; however, Bradley et al discloses that the polyurethane rubber can be a polyether-based polyurethane rubber (col. 4, lines 11-12).

Calabria et al discloses a urethane-covered three-piece golf ball whose polyurethane cover comprises a polyol component. Calabria et al teaches that polyurethane rubbers made with ether polyols such as polypropylene ether glycol and in particular polytetramethylene ether glycol exhibit good hydrolytic stability (i.e., substantially impervious to the effects of moisture) and good tensile strength (0073, 0074).

Given that Feeney et al is open to a polyurethane and given that Bradley et al is open to a polyurethane comprising a ether polyol component, it would have been obvious to one of ordinary skill in the art to use polypropylene ether glycol or polytetramethylene ether glycol to provide improved hydrolytic stability and tensile strength as taught by Calabria et al.

Conclusions

15. Applicant may want to review present claim numbering. In particular, according to typical claim dependencies, claims 7 would be dependent on claim 6 and claims 18 and 20 would be dependent on claim 11. The claims have been interpreted as having the present claim dependencies. The examiner is bringing this discrepancy to the applicant's attention; no correction is required.

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Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vickey Ronesi whose telephone number is (571) 272-2701. The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vickey Ronesi
August 3, 2004



Vasu Jagannathan
VASU JAGANNATHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700